Session 124

Printing

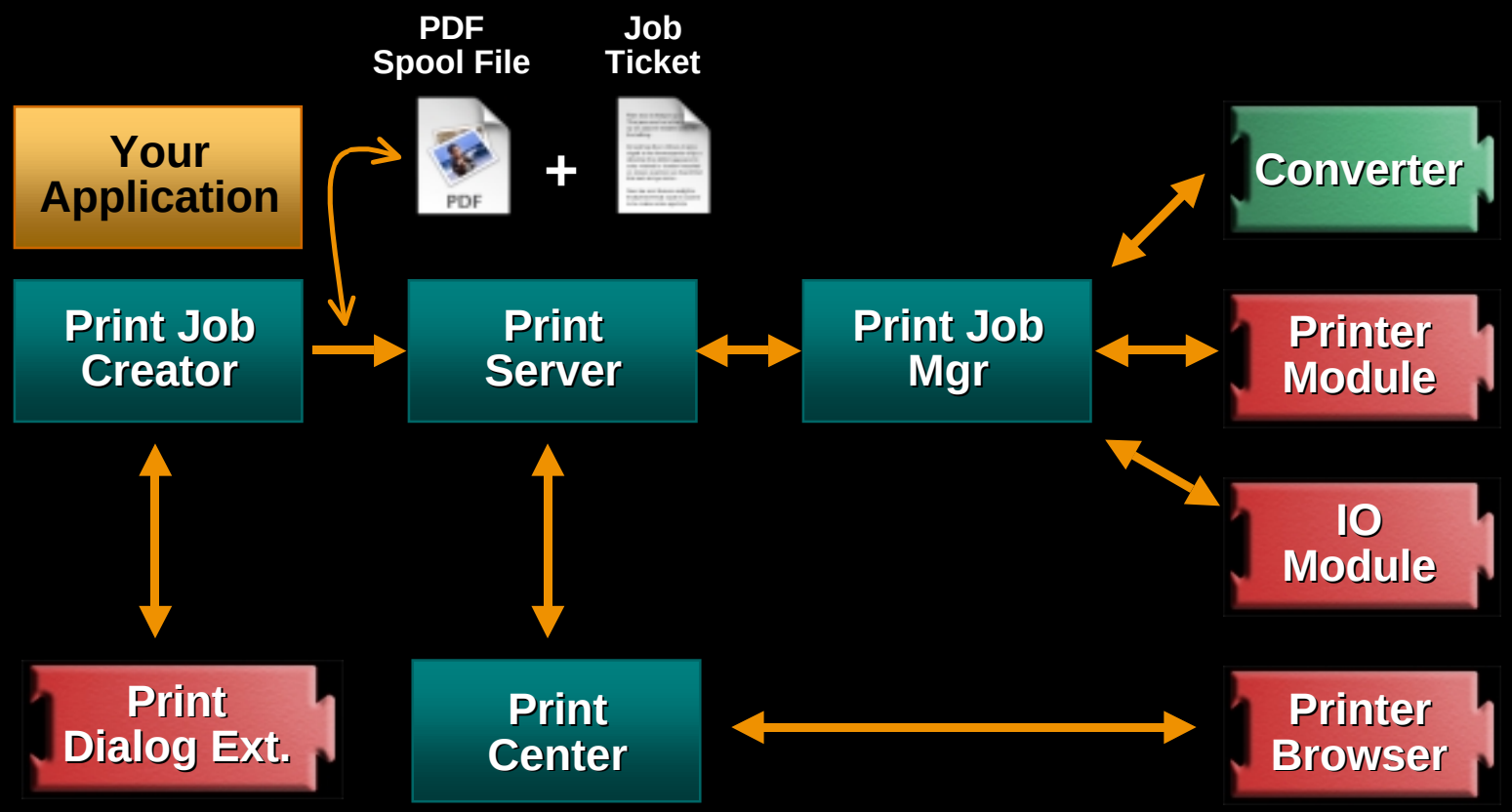
Paul Danbold
Printing Stooge

A Potpourri of Printing Tidbits

- Carbon printing
  - Some do's and don'ts
- Cocoa printing
  - Under the hood
- Unix printing
  - lpr and friends
- Diagnostic tools
- A few words about color

Printing on Mac OS X

A quick overview…



Carbon Printing

Carbon Printing

Use the “Session” APIs

- Incremental APIs will be “session” only
- “Non-session” APIs will be deprecated
- Sample code is “session” only
- CarbonLib printing is limited to a single “session”
- PageFormat and PrintSettings can be shared between sessions

Carbon Printing

Display your dialogs as Sheets

- PMSessionUseSheets and PMSheetDoneUPP
- It's your choice whether or not your application can print multiple jobs concurrently
- CarbonLib uses the Classic printer driver's dialogs
- Sample code available from DTS

Carbon Printing

Print Dialog Extensions

- Extend the Page Setup and Print dialog with PDEs, instead of AppendDITL
- Tell us about your PDE plans and design your UI using Aqua guidelines
- Exchanging data between your App and your PDE
  - PMSessionSetDataInSession
  - PMSessionGetDataFromSession
- Sample code available from DTS

Carbon Printing

Some helpful APIs

- PMSetJobNameCFString
- PMSetPageRange
- PMSessionError, PMSessionSetError

Carbon Printing

The Perils of PostScript III

- Be careful with the document format APIs
  - PMSessionGetDocumentFormatGeneration
  - PMSessionSetDocumentFormatGeneration
- Sample code in

  /Developer/Examples/Printing/App/

Carbon Printing

The Perils of PostScript III

- Be careful with PS pic comments
  - PMPostScriptBegin, PMPostScriptHandle, PMPostScriptData, PMPostScriptFile, PMPostScriptEnd
- Be careful with modifying other parts of the PS job
  - PMSessionSetPSInjectionData
- PICTwPS spool files cannot be Previewed

Carbon Printing

Compatibility with Classic print drivers

- CarbonLib ‘pdat’ resource
  - Copies, Orientation, Scaling, Resolution, Grayscale/Color mode
- Be careful with functions based on PrGeneral
  - PMSessionGeneral
  - PMPrinterGetPrinterResolutionCount, PMPrinterGetIndexedPrinterResolution
  - PMPrinterGetDriverCreator, PMPrinterGetDriverReleaseInfo

Carbon Printing

Page and paper issues

- The formatting printer, current printer and default printer
  - PMSessionCreatePrinterList
  - PMSessionSetCurrentPrinter
- Paper and pages
  - PMSetUnadjustedPaperRect, PMGetAdjustedPaperRect, PMGetAdjustedPageRect
  - Don’t forget to call PMSessionValidatePageFormat

Carbon Printing

To summarize…

- Use the “session” APIs
- Display your print dialogs as Sheets
- Use PDEs to extend the print dialogs
- Quartz 2D is a lot better than QD + PS
- CarbonLib Printing depends on well-behaved drivers

Cocoa Printing

Cocoa Printing

- NSPrintInfo
  - Maps to PMPageFormat and PMPrintSettings objects

Cocoa Printing

- NSPrintInfo
- NSPageLayout
  - Page Setup dialog
  - Settings (paper size, orientation, scaling) stored in NSPrintInfo

Cocoa Printing

- NSPrintInfo
- NSPageLayout
- NSPrintPanel
  - Print dialog
  - One Accessory View to add an additional panel
  - Settings (copies, page range, layout, etc.) stored in NSPrintInfo

Cocoa Printing

- NSPrintInfo
- NSPageLayout
- NSPrintPanel
- NSPrintOperation

Unix Printing

Unix Printing

lpr, lpd, lpq, lprm, lpc

- **lpr** works but it doesn't know about Print Center queues
  - You can **lpr** to NetInfo printers
- A "better" lpr is /usr/sbin/Print

  Print [-P printer] [-M mimetype] [-N nup] filename
- **lpd** for remote printing works
  - Even better if you are running Mac OS X Server

NetInfo Printers

How to create NetInfo printers

- Adding an lpr print queue via Print Center automatically creates a local NetInfo printer entry
- Creating a global NetInfo printer entry requires NetInfo Manager and appropriate privileges
- **man printcap** documents the NetInfo properties for printer entries
- Be careful with the printer model key (ty)
  - Use underscore for space and "/" to ensure correct PPD matching

Demo

/Developer/Tools/cplutil

Diagnostic Tools

For PostScript jobs

- PostScript error handler
- To write PostScript jobs to disk

```
defaults write NSGlobalDomain com.apple.print.rbi.JobCopy 1

defaults write NSGlobalDomain com.apple.print.rbi.JobCopyPath ‘mydirectory’
```

Printing & Color

Printing & Color

Differences between Classic and Mac OS X

- Applications can draw in multiple color spaces
- Every page element is assigned a profile and rendering intent
- The Printer Module provides the destination profile
- There's no way to turn off color management

Printing & Color

Raster

- Printer Modules can use the ImageAccess callback for image processing prior to PDF rendering
- Printer Modules need accurate profiles to cover all combinations of media types and quality modes
- Printer Modules can apply their own color science to PDF spool files rendered either to the System Profile or a device-neutral profile
- Look out for a new Tech Note on Printing & Color

Printing & Color

PostScript

- Source profiles are converted to color space invocations in the PostScript job
- The printer's Color Rendering Dictionary is used for the destination color space
- Color matching is done by the PostScript RIP in the printer, not the ColorSync CMM in the host

Roadmap

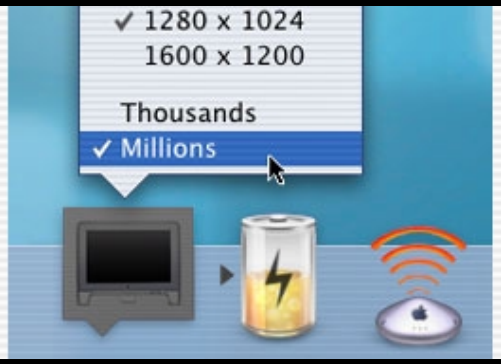
123 Advanced Cocoa Topics	Hall 2 **Thurs., 5:00pm**
132 Graphics & Imaging Tips & Tricks: Optimize your graphics and printing	Room A2 **Fri., 9:00am**
FF118 Feedback Forum: Graphics: Give us your feedback on Mac OS X graphics	Room J1 **Fri., 2:00pm**

Who to Contact

Travis W. Brown
Mac OS X Imaging Technology Manager
Apple Worldwide Developer Relations
travisb@apple.com

http://developer.apple.com/events/urls.html

Q&A



Travis W. Brown
Mac OS X Imaging Technology Manager
Apple Worldwide Developer Relations
travisb@apple.com

WWDC
Worldwide Developers Conference 2001